Student Name: _____

Missouri

Missouri Department of Elementary and Secondary Education

End-of-Course Assessment

Integrated Math II

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Directions to the Student

Today you will be taking the Missouri Integrated Math II Test. This is a test of how well you understand the course level expectations for Integrated Math II.

There are several important things to remember:

1. Read each question carefully and think about the answer. Then choose the one answer that you think is best.
2. Make sure you completely fill in the bubble for the answer on your answer sheet with a number 2 pencil.
3. If you do not know the answer to a question, skip it and go on. You may return to it later if you have time.
4. If you finish the test early, you may check over your work.
5. Do NOT write any answers in your test booklet. Mark your answers directly on your answer sheet with a number 2 pencil.

1. **How can the expression $x \cdot x \cdot y \cdot y \cdot y \left(\frac{2}{3}\right) \cdot \left(\frac{2}{3}\right)$ be rewritten using exponents?**

A. $\left(\frac{2}{3}\right)^2 x^2y^4$

B. $\left(\frac{4}{9}\right)^2 x^2y^4$

C. $\left(\frac{2}{3}\right)^2 (2x)^2 (4y)^4$

D. $\left(\frac{4}{3}\right)^2 (2x)^2 (4y)^4$

2. **The temperature in Deering, Missouri, is 86°F. What is this temperature, to the nearest degree, in Celsius?**

$$C = \frac{5}{9}(F - 32)$$

A. 16°C

B. 30°C

C. 54°C

D. 66°C

3. **An automobile dealership offers 3 models of cars in 4 different colors with a choice of either 2 doors or 4 doors. How many possible types of cars can be purchased from the dealership?**

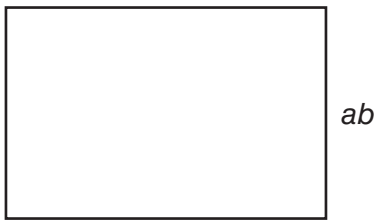
A. 13

B. 24

C. 72

D. 96

4. **What is the area of the rectangle shown?**



A. $5a$

B. $5a^2b$

C. $5a^3b$

D. $5a^3b^2$

5. **If the *first* Now = 3, what is the rule for the sequence 3, 11, 43, 171, . . . ?**

A. Next = Now^2 + 2

B. Next = Now + 8

C. Next = 3 · Now + 10

D. Next = 4 · Now − 1

Go On ▶

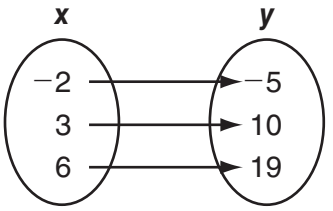
6. Which pattern is *different* from the others?

A. $f(x) = 3x + 1$

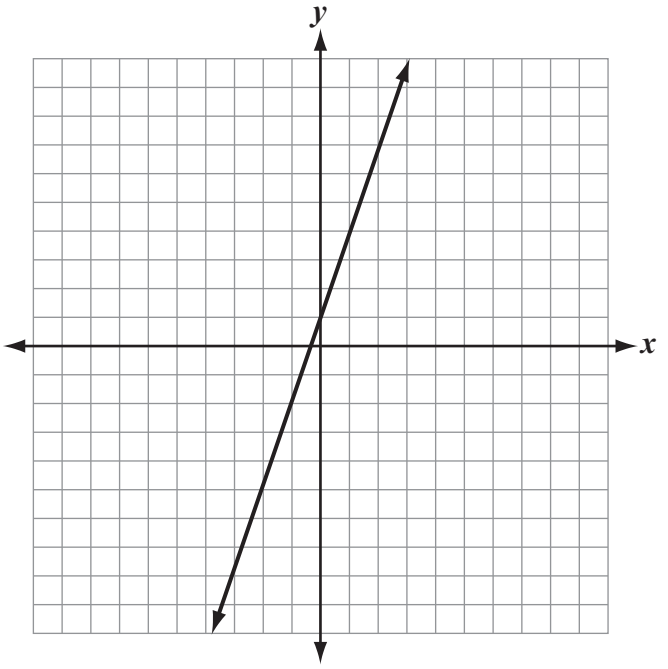
B.

x	y
−5	−14
4	12
12	36

C.



D.



7. Triangle ABC has vertices (1, 2), (5, −1), and (−2, 0). Sarah translated the triangle 2 units horizontally and −3 units vertically. What are the vertices of the new triangle?

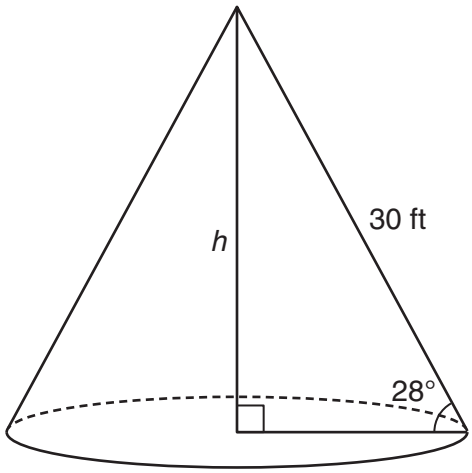
A. (3, 5), (7, 2), (0, 3)

B. (−2, 4), (2, 1), (−5, 2)

C. (3, −1), (7, −4), (0, −3)

D. (−1, −1), (3, −4), (−4, −3)

8. **A concrete mixing company stores sand in a pile in the shape of a right cone.**



(Not drawn to scale)

What is the height, *h*, of the pile of sand, to the nearest foot?

(sin 28° ≈ 0.4695, cos 28° ≈ 0.8829, tan 28° ≈ 0.5317)

A. 10 ft

B. 14 ft

C. 16 ft

D. 26 ft

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9. Parking fees are represented in the following table.

Parking Lot Fees	
First hour	$1.50
Each additional hour	$0.75

What is the fee to park a car for 36 hours?

A. $26.25

B. $27.00

C. $27.75

D. $28.50

10. A city planner is using a survey to help decide whether to put a stop sign or a stoplight at the street corner by the shopping mall. Which of the following samples would *best* represent the population the planner should consider?

A. high school students

B. employees who work at the mall

C. drivers leaving the mall on a given day

D. parents bringing children to a nearby daycare

11. The graph of the equation $y = 2^x$ is reflected over the *x*-axis. Which equation represents the new graph?

A. $y = -2^x$

B. $y = 2^{-x}$

C. $y = -2^{x-1}$

D. $y = -2^{-x}$

12. **Which statement is true about the functions $f(x) = -15x^2 + 32$ and $g(x) = -17x^2 + 5x + 32$?**

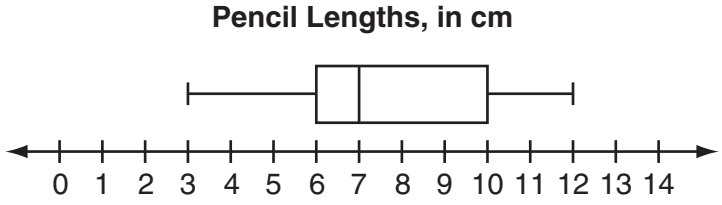
A. $f(x)$ and $g(x)$ have the same zeros.

B. $f(x)$ has a higher maximum than $g(x)$.

C. $f(x)$ and $g(x)$ have the same y-intercept.

D. $f(x)$ rises and falls more sharply than $g(x)$.

13. **Mr. Henry asked 28 students to measure their pencils to the nearest centimeter. The results are displayed in the box plot below.**



Mr. Henry then instructed each student to add 3 cm to his or her measurement. Which statement below is true about a new plot with the altered data?

A. The range will increase by 3 units.

B. The median will be greater than 10.

C. The interquartile range will be 3 times larger.

D. The plot will be translated 3 units to the right.

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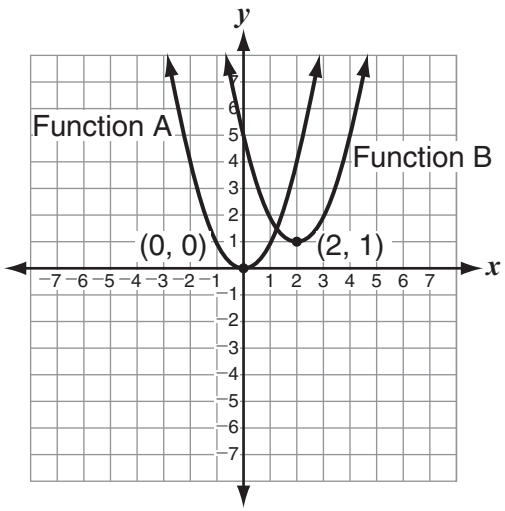
14. The coordinate plane below shows the graphs of Function A and Function B.



Which of these translations maps Function A onto Function B?

A. Function A is translated 1 unit left and 2 units up.

B. Function A is translated 2 units right and 1 unit up.

C. Function A is translated 2 units left and 1 unit down.

D. Function A is translated 1 unit right and 2 units down.

15. **Which type of function *best* models the data in the table?**

x	*y*
−4	0.0016
−2	0.04
0	1
2	25
4	625

A. constant

B. exponential

C. linear

D. quadratic

16. **Cooper performs the following steps while solving an equation.**

$$\textbf{Step 1: } \frac{2}{5}x - 6x = -14$$

$$\textbf{Step 2: } \frac{5}{2}\left(\frac{2}{5}x - 6x\right) = \frac{5}{2}(-14)$$

Which reason supports the work from step 1 to step 2?

A. distributive property

B. associative property

C. addition property of equality

D. multiplication property of equality

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17. **Which of these linear equations is parallel to $y = 3x + 5$?**

A. $y = \frac{1}{3}x + 5$

B. $y = 3x + 10$

C. $y = -3x + 5$

D. $y = -\frac{1}{3}x + 10$

18. **Simplify:** $\left(\frac{2x^3}{x}\right)^5$

A. $10x^{10}$

B. $10x^{14}$

C. $32x^{10}$

D. $32x^{14}$

19. **Bill was asked to put the values listed below in order from *least* to *greatest*.**

$$R = |2 - 8|$$

$$S = -(2^2)$$

$$T = \sqrt{2}$$

$$U = \sqrt[3]{8}$$

$$V = (-2)^3$$

Which of the following lists is in the correct order?

A. *S*, *V*, *T*, *U*, *R*

B. *R*, *U*, *T*, *S*, *V*

C. *V*, *S*, *T*, *U*, *R*

D. *V*, *R*, *S*, *U*, *T*

20. **Which equation is equivalent to $y = x^2 + 4x + 4$?**

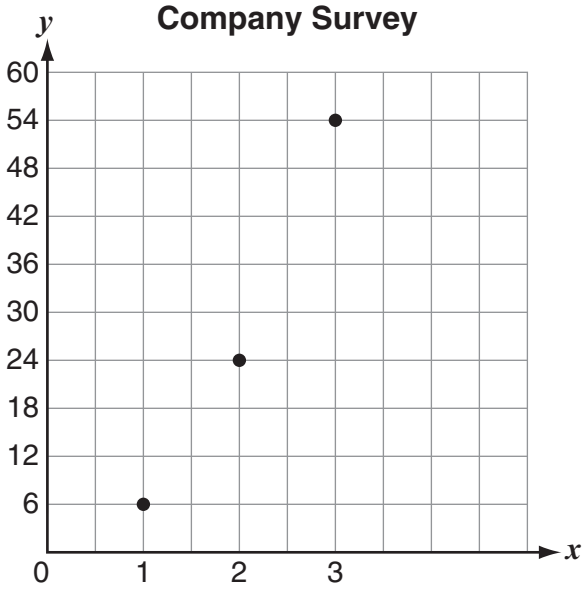
A. $y = (x - 2)^2$

B. $y = (x + 2)^2$

C. $y = x(x + 4)$

D. $y = (x + 1)(x + 4)$

21. **A survey for a company was completed recently, and the information was placed in a scatterplot. The company would like to use the data to plan for future changes.**



Which function would *best* model the data to help the company make future predictions?

A. $y = 6x$

B. $y = 6x^2$

C. $y = 6^x - 12$

D. $y = 3x^2 + 3$

Go On ▶

22. **Jessica owns a restaurant that offers a baked potato or green beans as a side dish. Of her first 30 customers, 14 ordered a baked potato, 22 ordered green beans, and 4 ordered neither. How many customers ordered *both* a baked potato and green beans?**

A. 6

B. 8

C. 10

D. 12

23. **Emily graphed the function $y = x^2 + 2$. Mark graphed $y = 0.5x^2 + 2$. If they both used the same grid scale, which statement describes Mark's graph compared to Emily's graph?**

A. Mark's graph is wider.

B. Mark's graph is narrower.

C. Mark's graph has a lower *y*-intercept.

D. Mark's graph has a higher *y*-intercept.

24. **The length of a rectangle is 3 feet more than twice its width. Which of these equations represents the area, *A*, of the rectangle in terms of the width, *x*?**

A. $A = 6x + 6$

B. $A = x^2 + 3x$

C. $A = 2x^2 + 3$

D. $A = 2x^2 + 3x$

25. **Four points are represented by the coordinate matrix below.**

$$\begin{matrix} M & A & T & H \end{matrix}$$
$$\begin{bmatrix} -1 & 5 & 2 & -3 \\ 4 & -3 & 7 & -2 \end{bmatrix}$$

Which coordinate matrix represents a reflection of the four points across the *y*-axis?

A.
$$\begin{matrix} M & A & T & H \end{matrix}$$
$$\begin{bmatrix} 1 & -5 & -2 & 3 \\ 4 & -3 & 7 & -2 \end{bmatrix}$$

B.
$$\begin{matrix} M & A & T & H \end{matrix}$$
$$\begin{bmatrix} -1 & 5 & 2 & -3 \\ -4 & 3 & -7 & 2 \end{bmatrix}$$

C.
$$\begin{matrix} M & A & T & H \end{matrix}$$
$$\begin{bmatrix} 1 & -5 & -2 & 3 \\ -4 & 3 & -7 & 2 \end{bmatrix}$$

D.
$$\begin{matrix} M & A & T & H \end{matrix}$$
$$\begin{bmatrix} -1 & 5 & 2 & -3 \\ 4 & -3 & 7 & -2 \end{bmatrix}$$

Go On ▶

26. **In a Missouri high school, there are 525 students. The number of female students is 5 more than 3 times the number of male students. How many male students are in the high school?**

A. 130

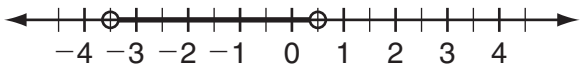
B. 180

C. 260

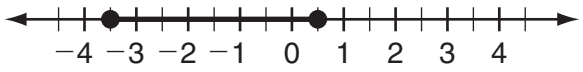
D. 395

27. **Which graph shows the solution for $|2x + 3| \leq 4$?**

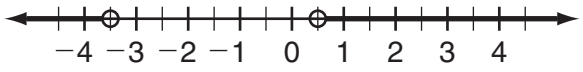
A.



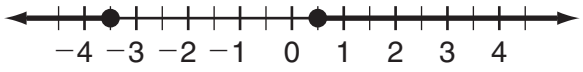
B.



C.



D.



28. **Which graph or table represents a pattern of the form $y = ab^x$?**

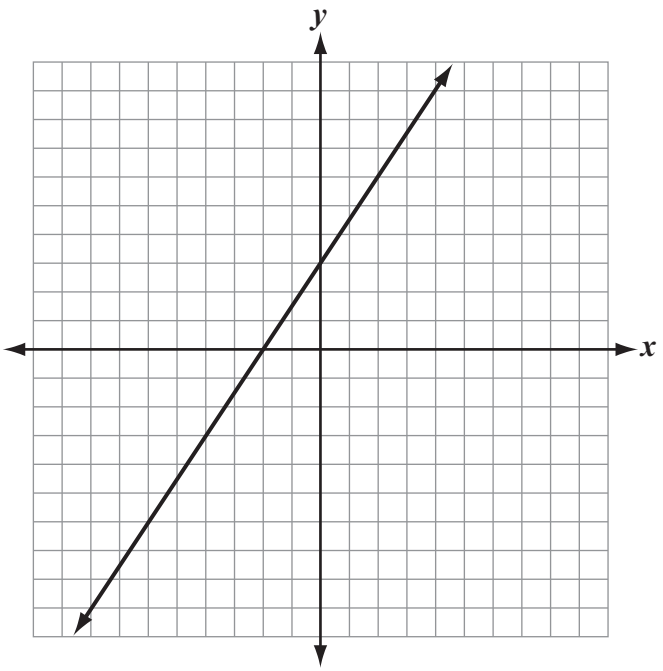
A.

x	y
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	9

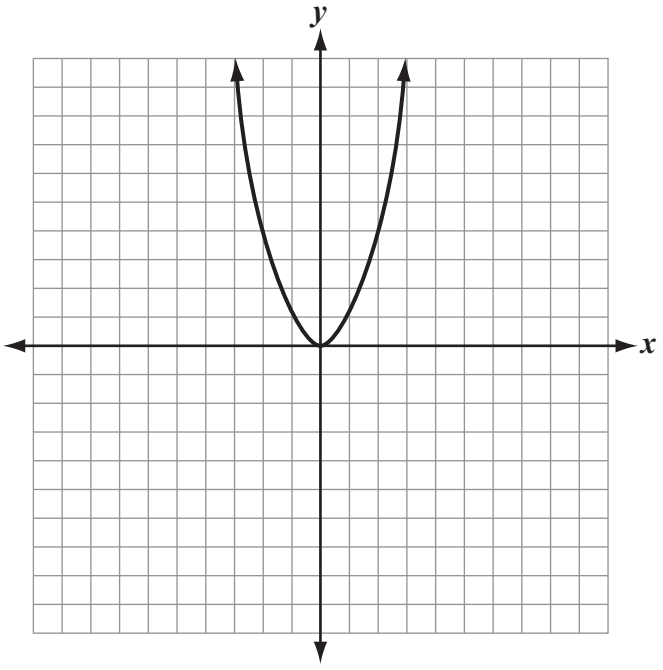
B.

x	y
-2	5
-1	7
0	9
1	11
2	13

C.



D.



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29. **Danielle and Kyle are in a class of 10 students. They each must give an oral report on their favorite character in history. The order of the students reporting is determined at random. What is the probability that Danielle will report first and Kyle will report second?**

A. $\frac{1}{100}$

B. $\frac{1}{90}$

C. $\frac{1}{81}$

D. $\frac{1}{50}$

30. **Simplify:** $(x^2y^{-3}x^{-4}y^5)^3$

A. $\frac{x}{y}$

B. $\frac{y}{x}$

C. $\frac{x^6}{y^6}$

D. $\frac{y^6}{x^6}$

31. **In a math class, the teacher uses a weighted mean to assign grades. The first test counts as 1 grade. The second test counts for 2 grades. The third test counts for 3 grades, and the fourth test counts for 4 grades.**

Student Scores on Four Tests

	Test 1	Test 2	Test 3	Test 4
Abigail	68	78	83	91
Bryant	93	91	83	68
Callie	91	83	68	78
Darian	67	83	91	93

Which list ranks the students from *highest* to *lowest* using their overall grades?

A. Abigail, Bryant, Callie, Darian

B. Bryant, Darian, Abigail, Callie

C. Callie, Bryant, Abigail, Darian

D. Darian, Abigail, Bryant, Callie

32. **A quadratic function has *x*-intercepts at $(-2, 0)$ and $(8, 0)$, with a maximum at $(3, 50)$. Which equation represents this function?**

A. $y = (x - 8)(x + 2)$

B. $y = (x + 8)(x - 2)$

C. $y = -2(x - 8)(x + 2)$

D. $y = -\frac{1}{2}(x - 8)(x + 2)$

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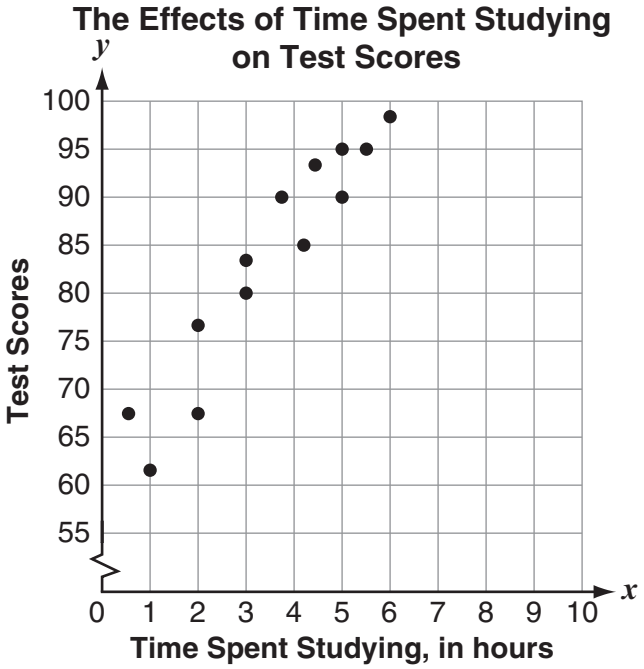
33. **Which equation *best* models the data in the scatterplot below?**



A. $y = 7x + 95$

B. $y = 7.5x + 55$

C. $y = 7.5x + 57.5$

D. $y = 8x + 57.5$

34. **A polygon has vertices A(1, 0), B(−1, −4), C (−7, −2), and D (−5, 2). Which term *best* describes this polygon?**

A. parallelogram

B. rectangle

C. rhombus

D. trapezoid

35. **The probability of rain is 40% on Friday, 60% on Saturday, and 10% on Sunday. What is the probability that it will *not* rain during this three-day time period?**

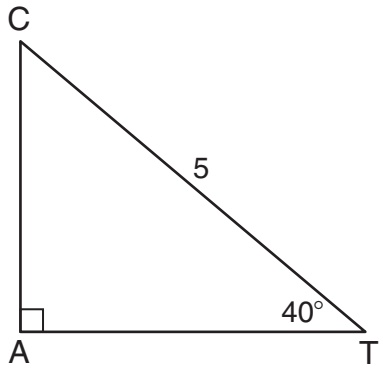
A. 2.4%

B. 10%

C. 21.6%

D. 40%

36. **Which equation can be used to find AC in the triangle below?**



A. $AC = 5\sin(40°)$

B. $AC = 5\cos(40°)$

C. $AC = \frac{\sin(40°)}{5}$

D. $AC = \frac{\cos(40°)}{5}$

Go On ▶

37. **Which type of function is represented by the pattern in the table below?**

x	*y*
−3	5
−2	0
0	−4
2	0
3	5

A. constant

B. exponential

C. linear

D. quadratic

38. **The members of the drama club sold 1,200 tickets to their play for a total revenue of $4,362.50. The student tickets were $2.00, and the adult tickets were $4.50. How many student tickets were sold?**

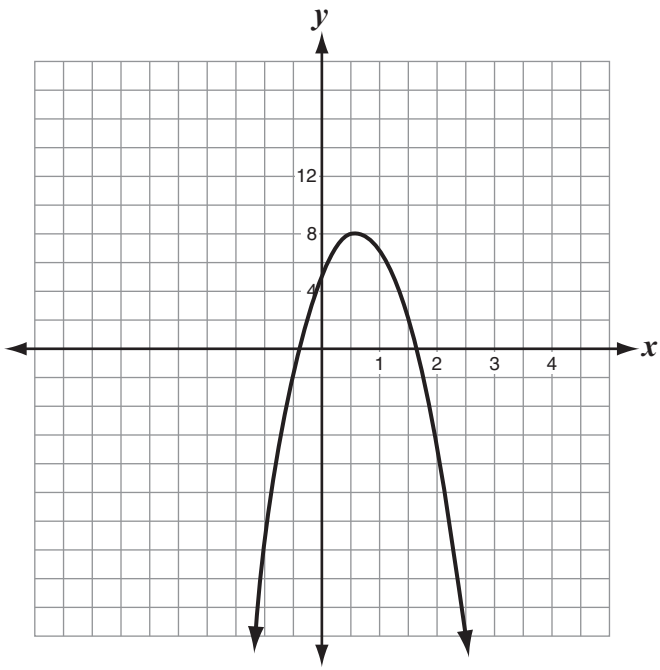
A. 184

B. 415

C. 600

D. 785

39. **Which equation represents the graph shown below?**



A. $y = 8x^2 - 10x - 5$

B. $y = 8x^2 - 10x + 5$

C. $y = -8x^2 + 10x - 5$

D. $y = -8x^2 + 10x + 5$

40. **What transformations are applied to $f(x) = 3^x + 6$ to obtain the image $f'(x) = 3^{2x} + 8$?**

A. two reflections

B. a reflection and a dilation

C. a dilation and a translation

D. a translation and a reflection

STOP

Released Form